

CLAIMS

1. A hermetic compressor comprising:

a hermetic container;

5 a motor element accommodated in the hermetic container; and

a compressing element that is accommodated in the hermetic container and driven by the motor element,

wherein

10 the compressing element has a shaft including an eccentric shaft and a main shaft, and a main bearing for pivoting the main shaft,

the motor element is a bipolar permanent magnet motor that has a stator and a rotor, the rotor having a built-in permanent magnet in a rotor core,

15 a hollow bore is formed at an end on the compressing element side of the rotor core, and

a wide magnetic path is provided to smooth flow of magnetic flux by the permanent magnet.

2. The hermetic compressor according to claim 1,

20 wherein axial length of the rotor core is longer than axial length of a stator core of the stator, hence the wide magnetic path is provided to smooth the flow of the magnetic flux by the permanent magnet.

3. The hermetic compressor according to claim 2,

25 wherein both axial ends of the rotor core are disposed outside both axial ends of the stator core, respectively.

4. The hermetic compressor according to claim 2,

wherein axial length of the permanent magnet is shorter than axial length of the rotor core.

5 5. The hermetic compressor according to claim 2, wherein

axial length of the permanent magnet is shorter than axial length of the rotor core, and

the permanent magnet covers a region having no bore in the axial direction of the rotor.

10

6. The hermetic compressor according to claim 2, wherein,

the rotor core has a cylindrical through hole having a first diameter into which the shaft is inserted,

15 the bore is a cylindrical recessed part that is formed in the upper part of the through hole and has a second diameter larger than the first diameter,

the permanent magnet has an axial length shorter than the axial length of the rotor core, and covers a region of the first diameter in the rotor in an axial direction of the rotor core.

20

7. The hermetic compressor according to claim 1,

wherein the main bearing is made of magnetic material, and the wide magnetic path is provided to smooth the flow of the magnetic flux by the permanent magnet.

25

8. The hermetic compressor according to claim 7,

wherein the main bearing is one of a casting and a molded product

that is made of iron-based sintered material.

9. The hermetic compressor according to claim 7 or claim 8,
wherein axial length of the bore is $1/3$ of axial length of the rotor
5 core or more.

10. The hermetic compressor according to claim 7 or claim 8,
wherein a clearance between an peripheral surface of the bore and
an outer peripheral surface of the main bearing is 0.5 to 3 mm.

10

11. The hermetic compressor according to one of claims 1, 2 and 7,
wherein

the motor element is a self-starting permanent magnet
synchronous motor,

15

the motor element has many conductor bars of a cage conductor for
start on the outer periphery of the rotor core, and

the permanent magnet is disposed in the inner peripheral side of
the conductor bars.

20

12. The hermetic compressor according to one of claims 1, 2 and 7,
wherein the permanent magnet is a rare-earth magnet.